

## CLAIMS:

1. A communications system for mobile units within a facility comprising a central controller, a plurality of wireless base stations having an adjustable transmission power, said base stations being distributed throughout the facility for wireless communication with said controller and said mobile units, said controller configuring said base stations into a plurality of micro-cells each including at least two base stations by adjusting the wireless transmission power of said base stations such that at least one base station in each micro-cell is a member of another micro-cell, at least one base station is able to communicate with the central controller and all mobile units within a selected area of the facility are able to communicate with at least one base station.
2. A communications system as claimed in claim 1 wherein each micro-cell includes at least two base stations that are members of other micro-cells.
- 15 3. A communication system as claimed in claim 2 wherein each micro-cell includes from three to six base stations.
4. A communication system as claimed in any one of claims 1 to 3 wherein the base stations periodically transmit a message including a unique identification code.
- 20 5. A communication system as claimed in claim 4 wherein said message includes a measure of the transmitting power of the base station.
6. A communication system as claimed in any one of claims 1 to 5 wherein each base station maintains a list of signals received from other base stations.
- 25 7. A communication system as claimed in any one of claims 1 to 6 wherein the base station transmission power is adjusted to provide minimal overlap of base stations between micro-cells.

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8. A communication system as claimed in any one of claims 1 to 7 wherein the base stations each have a known location and the micro-cells have a relatively small area compared to selected area of the facility.
9. A locating and messaging system for mobile units in a facility including a communication system as claimed in any one of claims 1 to 8.
10. A location and messaging system as claimed in claim 9 wherein the mobile units include a transceiver for receiving and sending signals, a display device for displaying messages, a power source and at least one user interface for accepting an input.
11. A method of wireless communication between a central controller and mobile units within a facility via a plurality of base stations having adjustable transmission power distributed throughout the facility for wireless communication with said controller and said mobile units comprising configuring the base stations into a plurality of micro-cells each including at least two base stations by adjusting the wireless transmission power of said base stations such that at least one base station in each micro-cell is a member of another micro-cell, at least one base station is able to communicate with the central controller and all mobile units within a selected area of the facility are able to communicate with at least one base station.
12. A method as claimed in claim 11 wherein each micro-cell includes at least two base stations that are members of other micro-cells.
13. A method as claimed in claim 12 wherein each micro-cell includes from three to six base stations.
14. A method as claimed in any one of claims 11 to 13 wherein the base stations periodically transmit a message including a unique identification code.

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15. A method as claimed in claim 14 wherein said message includes a measure of the transmitting power of the base station.
16. A method as claimed in any one of claims 11 to 15 wherein each base station maintains a list of signals received from other base stations.
- 5 17. A method as claimed in any one of claims 11 to 16 wherein the base station transmission power is adjusted to provide minimal overlap of base stations between micro-cells.
- 10 18. A method as claimed in any one of claims 11 to 17 wherein the base stations each have a known location and the micro-cells have a relatively small area compared to selected area of the facility.
19. A method for locating and messaging to mobile units in a facility including a method as claimed in any one of claims 11 to 18.
- 15 20. A method as claimed in claim 19 wherein the mobile units include a transceiver for receiving and sending signals, a display device for displaying messages, a power source and at least one user interface for accepting an input.